

Fig. S1. The SEM images of MA filler and their mapping elements.

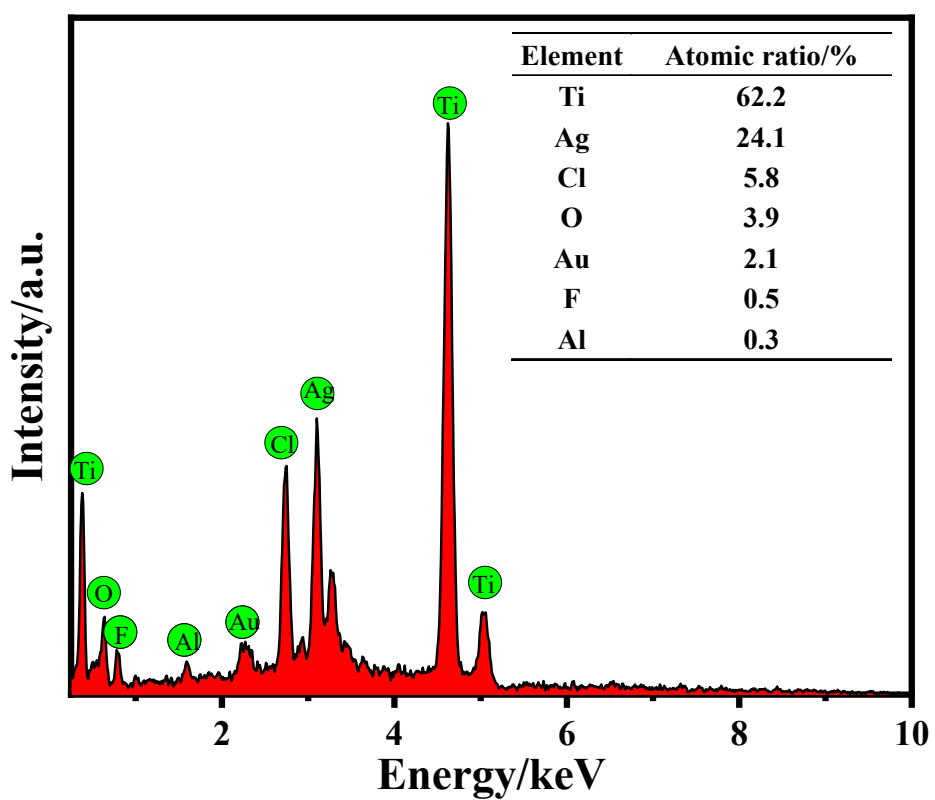


Fig. S2. The element mass proportions of MA filler from their element mappings.

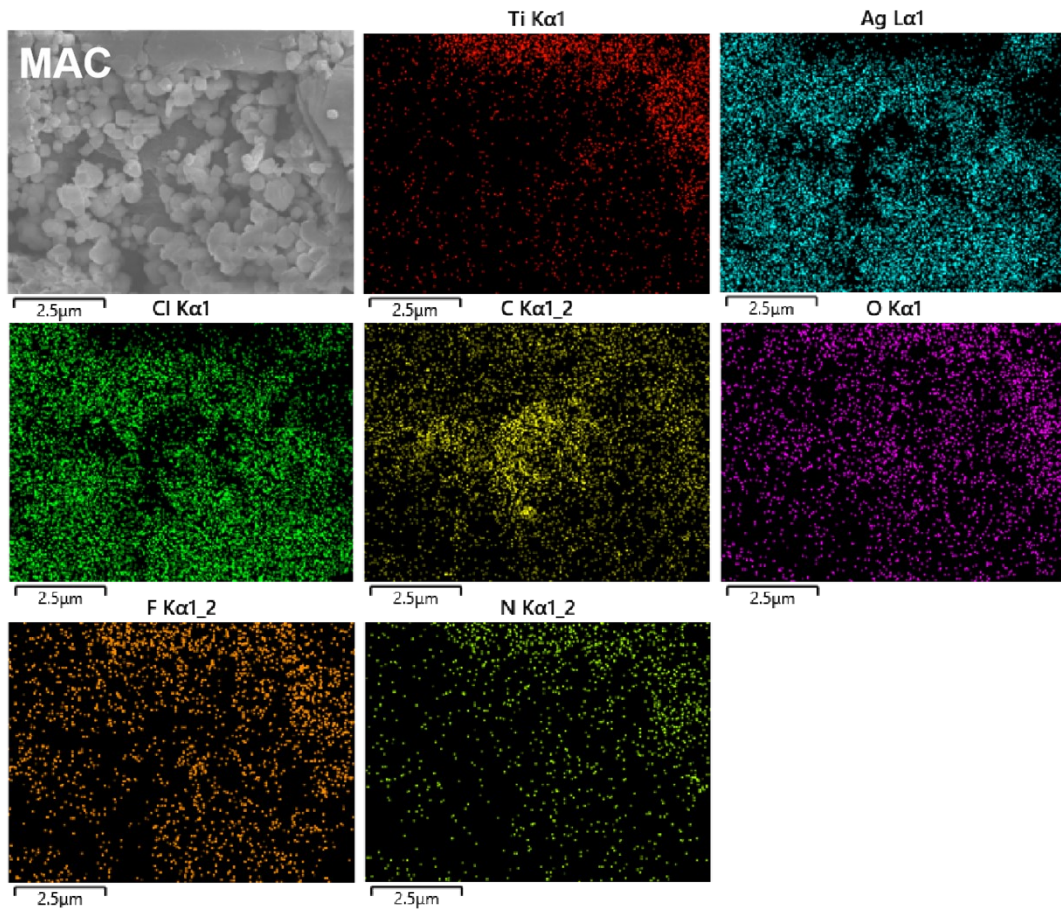


Fig. S3. The SEM images of MAC filler and their mapping elements.

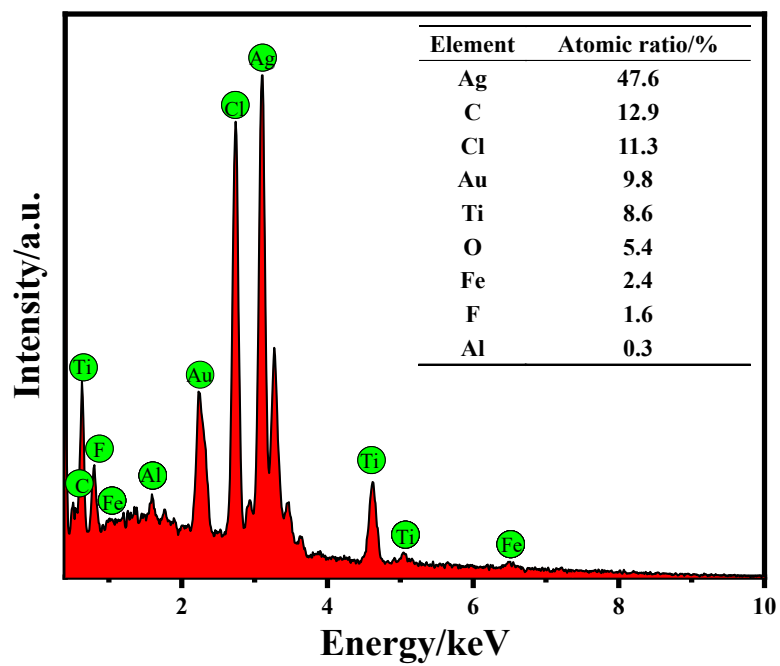


Fig. S4. The element mass proportions of MAC filler from their element mappings.

Because of the interference from the other substances such as the conductive tape on the sample table, we choose a small area of the hybrid fillers to analyze their elementary compositions, as shown in Figs. S1-4.